3.17 Cumulative Impacts

Cumulative impacts are defined by the Council on Environmental Quality's regulations implementing the National Environmental Policy Act (NEPA) as the impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR Section 1508.7).

Through public and agency scoping and review of the Draft EIS, the project team focused its discussion of cumulative effects. As a result, the Final EIS describes cumulative effects to those resources for which the proposed project is likely to contribute, either positively or negatively—or where it is likely to alter the rate or magnitude of other foreseeable impacts. These resources are: Water Resources; Wetlands; Wildlife, Fish, and Threatened and Endangered Species; Land Use, Socioeconomics, and Environmental Justice; Farmland; and Cultural Resources.

Cumulative impacts to the other resources are not discussed because the proposed transportation project is not likely to contribute, either positively, negatively, nor is it likely to alter the magnitude of other foreseeable impacts.

Spatial and temporal parameters for cumulative effects analysis of the SR 167 Extension are described in Section 3.1.2. Reasonably foreseeable future actions and projects are summarized in Section 3.2.7. Cumulative impacts on specific resources are discussed in respective sections of Chapter 3.

This section summarizes the conclusions for resources considered most susceptible to cumulative impacts. Net Environmental Benefits Analysis (NEBA) is then discussed to estimate cumulative changes in terms of stream and riparian habitats.

3.17.1 Critical Resources

Table 3.17-1 summarizes the anticipated contribution to cumulative impacts associated with the SR 167 Build Alternative and other development planned under the Growth Management Act (GMA). Resources that may experience substantial cumulative change are shaded in the table and described further in this section. The impacts were determined by reviewing the direct project impacts and best professional judgment of cumulative impacts.

Table 3.17-1: Anticipated Cumulative Impacts Compared

Resource (critical resources are shaded)	Build Alternative	No Build - Other Planned Development	Impacts as a Result of Planned Growth
Water Resources	Impacts	Impacts	Yes
Wetlands	Impacts	Impacts	Yes
Wildlife, Fish and T&E Species	Impacts	Impacts	Yes
Air	No change	No change	Yes
Noise	Impacts	Impacts	Yes
Energy	Improvements	Impacts	Yes
Hazardous Materials	Improvements	Improvements	Yes
Visual Quality	Impacts	Impacts	Yes
Public Services & Utilities	No change	Impacts	Yes
Land Use	Impacts	Impacts	Yes
Socio-Economic	Improvements	Improvements	Yes
Farmland	Impacts	Impacts	Yes
Displacement, Disruption, and Relocation	Impacts	Impacts	Yes
Transportation	Improvements	Improvements	Yes
Pedestrian and Bike Facilities	Improvements	Impacts	Yes
Cultural Resources	Impacts	Impacts	Yes

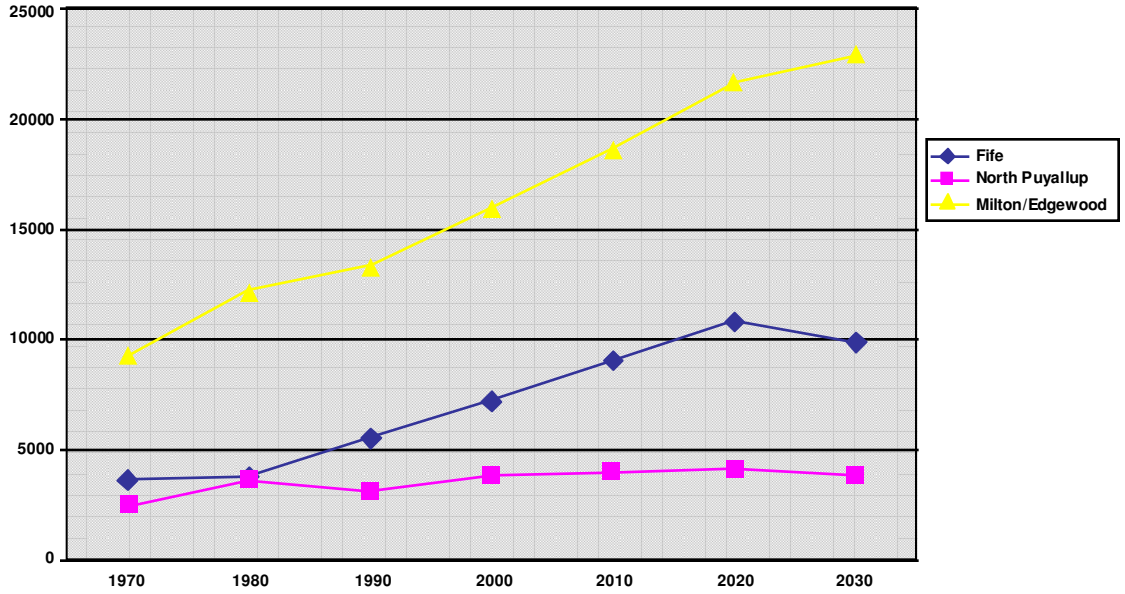
No change = no change from baseline; Impacts = anticipated negative cumulative impacts to the resource; Improvements = anticipated positive cumulative impacts the resource.

The Build Alternative is anticipated to affect the rate of growth of the development planned under the GMA by the cities of Fife, Milton, and Puyallup, and Pierce County. All resource impacts are likely to be affected as a result of planned growth, as identified in Table 3.17-1.

Land Use, Socioeconomics, and Environmental Justice

Cumulative impacts on land use are discussed in Section 3.11.1. Responsibility for the pattern and density of growth and development of the landscape lies with the county and city governments. Considerable population growth has occurred in the study area and Pierce County. This growth is forecasted to continue through 2030. Figure 3.17-1 summarizes population trends documented by Pierce County between 1970 and 2030.

Figure 3.17-1: Population Growth in the Proposed SR 167 Corridor



Under the Build Alternative approximately 286 to 306 acres would be directly converted to transportation-related uses. This incremental effect along with other land use effects and transportation improvement projects in the region would contribute to and hasten the build out within the project area.

The conversion to high density land use is consistent with and supported by the policy framework for future development as identified in the comprehensive plans and development requirements adopted by valley jurisdictions (Fife and Puyallup).

Substantial cumulative impacts occur if a combination of environmental effects (i.e. traffic, displacements, noise, and visual impairments) has more than a moderate impact on community cohesion. No substantial cumulative impact is anticipated as the completion and operation of the proposed project would not create additional physical barriers to social interaction. In addition, the majority of the project in the northern segment of the corridor falls within the existing I-5 corridor; therefore, no cumulative effect on movement within or between neighborhoods is anticipated.

Farmland

Cumulative impacts on farmland are discussed in Section 3.12.5. Since the Tier II DEIS was written, much of the land that has been identified for the highway alignment has been on the market for sale or has already been sold for development purposes. It is expected that as impacted farmland is sold, it will convert to commercial/industrial uses with the Build Alternative or long-term with the No Build Alternative.

Cumulative impacts on farmlands are expected to be substantial. This is a result of the urban designation of the area, the increasing land values that make farming

less profitable, and lack of farmland protection policies. The loss of farmland in the Puyallup River Valley represents a shift in historic use of the area.

Water Resources

Cumulative impacts on water resources are discussed in Section 3.2.7. Groundwater within the Puyallup River Valley is of good quality indicating no major cumulative impacts. Surface waters in the area have been impacted by clearing, conversion to farming, and commercial/industrial or residential development over the past century. The Build Alternative is expected to improve the overall functioning of the riparian-stream -wetland systems in the project area. This will be an overall improvement from the current open and ditched stream systems that are overrun by grasses and other invasive weeds. However, no single project can compensate for all past impacts and all future development. It is likely that water quality, habitat complexity and many other water resources will be impacted by future development regulated by other agencies.

Wetlands

Cumulative impacts on wetlands are discussed in Section 3.3.6. Wetlands in the Puyallup River basin will continue to be converted to residential/commercial/ industrial land uses irrespective of the proposed project. The lack of available data on wetland loss and the effectiveness of replacement efforts required of compensatory mitigation make it difficult to quantify the total extent of impacts to wetland functions and values. The long-term impacts on wetlands associated with this project are not considered substantial due to the opportunities for improving degraded wetlands in the area and the benefits of riparian restoration for stormwater management.

Wildlife, Fish and Threatened & Endangered Species

Cumulative impacts on wildlife, fish, and Threatened & Endangered (T&E) species are discussed in Section 3.4.8. The most notable cumulative effects on these species include increases in summer stream temperatures and pollutants including stormwater runoff contaminants, conversion of existing habitats (forested, agricultural, vacant land), hastened build out of high-density uses, further fragmentation of riparian and other habitat areas, and a reduction in available mitigation and restoration areas. The Riparian Restoration Proposal (RRP) will restore and protect a large area of riparian and wetland habitat, connect over 1,450 acres of riparian and upland habitat, and improve stream habitat conditions in Hylebos and Wapato Creeks and Surprise Lake Drain. However, the RRP is not expected to completely offset cumulative impacts. The degree of cumulative impact minimization is largely dependent on successful coordination of large-scale Watershed planning and implementation and the availability of future mitigation and restoration sites.

Cultural Resources

Cumulative impacts on cultural resources are discussed in Section 3.16.6. Past, present, and future actions in the Puyallup Valley cumulatively impact cultural resources primarily through ground disturbance or building demolition associated with transportation improvements and new commercial or industrial developments. Many archaeological sites and historic structures were impacted

by past activities before laws and regulations were promulgated to protect them. This may also be true of some traditional cultural properties of the Puyallup Tribe of Indians. Measures now required to mitigate avoidable adverse effects of new projects to cultural resource minimize future increases in cumulative impacts.

3.17.2 Net Environmental Benefits Analysis

NEBA was conducted to quantitatively estimate the benefits of the RRP being offered as an alternative to conventional stormwater management for the SR 167 Extension Project (CH2M HILL 2005). NEBA is a method for comparing net environmental benefits accumulated over time from different project scenarios.

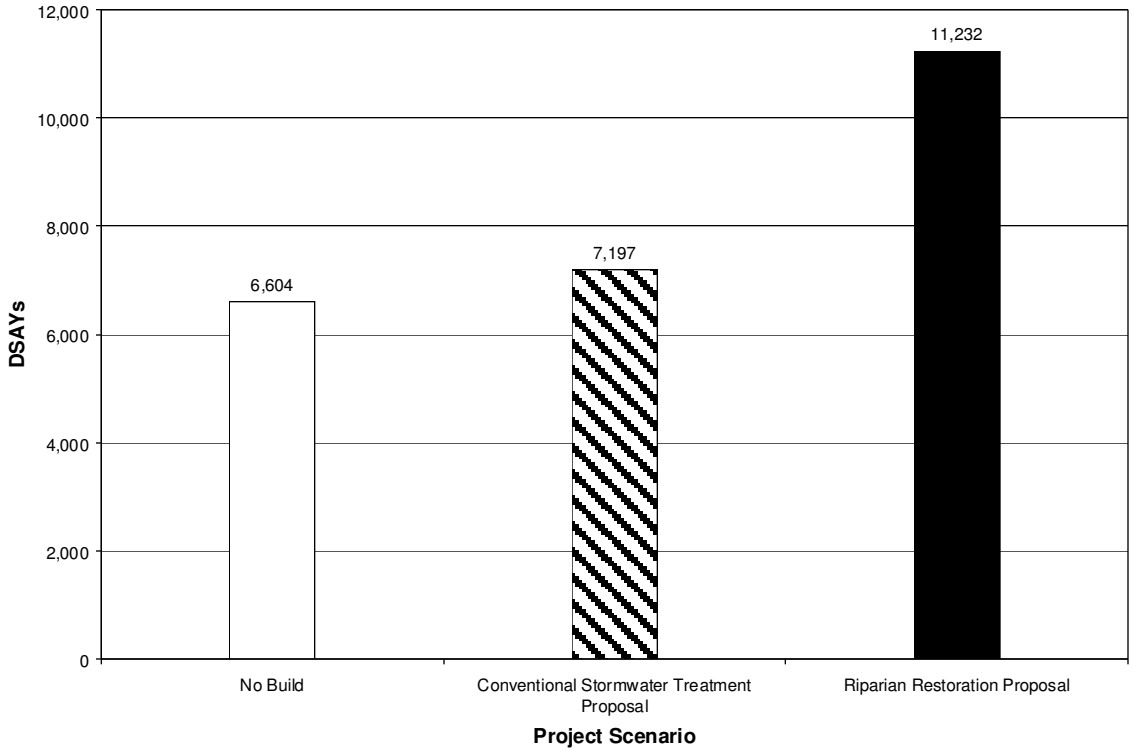
Section 3.2 provides more information about stormwater management alternatives evaluated in the NEBA. Net environmental benefits for stream channel, riparian wetland, and riparian upland habitat types were evaluated for portions of Hylebos Creek, Surprise Lake Drain, and Wapato Creek.

Impacts to habitats related to the proposed road construction outside of the restoration study area were not addressed in this NEBA. In addition, no costs were evaluated in this study.

This NEBA used Habitat Equivalency Analysis to calculate ecological benefits integrated over area and time. This allowed comparison of gains in services that would occur over different time periods.

The results from the NEBA show that the RRP would provide substantially greater environmental benefits than the No Build and conventional stormwater treatment scenarios (Figure 3.17-2). The conventional stormwater treatment proposal would provide more environmental benefits than the No Build, albeit limited.

Figure 3.17-2: Relative Comparison of Ecological Services by Project Scenario



Note: DSAYs or Discounted Service Acre Years is the unit of measure for ecological benefits integrated over area and time.

The RRP has the potential to provide many environmental benefits.

Protects habitat – Preserving priority habitats is necessary before the remainder of the Puyallup River Valley becomes developed. In addition to improving the overall habitat condition, the RRP also protects the stream, wetland, and riparian habitat.

Enhances connectivity of wildlife habitat – The RRP links multiple fragmented habitats together resulting in over 1,000 acres of contiguous habitat. The RRP creates a link from the Hylebos Wetlands in Federal Way down to Hylebos Creek, and potentially Commencement Bay. The linkage of Surprise Lake Tributary connects the Hylebos Creek to undeveloped upland areas of the Surprise Lake drainage. Undeveloped upland habitat areas along the hillside between Surprise Lake Tributary and Simmons Creek connect to the Wapato Creek RRP. It is reasonable to expect the RRP wildlife connectivity would be beneficial to all the habitat areas that are connected.

Allows public access and environmental education – FHWA and WSDOT are proposing a multi-use trail between 54th Avenue East and Highway 99, which could provide opportunities for passive recreational activities in the RRP area.

Treats highway runoff – Where possible, low impact development methods would be used, including ecology embankments or natural dispersion over landscaped fill slopes. No ditches are proposed between the highway and the

creek where natural dispersion or ecology embankments are used, opting instead for natural dispersion through the riparian buffer. This method of conveyance might result to localized ponding and the natural establishment of forested wetlands, which is acceptable for this land use.

Improves stream conditions that are limiting to fish – The relocated sections of Hylebos Creek and Surprise Lake Tributary would include engineered large woody debris (LWD) as part of the channel designs. As the new riparian vegetation matures, it would begin to recruit into the channels and provide a sustainable source of LWD. As the streambank vegetation of the RRP matures, the channels would develop more complexity, including undercut root banks, LWD, and pools. These features provide in-stream refugia and more variety of aquatic habitats. The RRP provides much-needed off-channel-rearing habitat for juvenile salmon.

Supports salmon recovery efforts – The RRP complements other restoration efforts by the Puyallup Tribe, Pierce County, Pierce County Conservation District, and Friends of the Hylebos Wetlands that improve spawning habitat in the upper watersheds, as well as estuarine habitat improvements in Hylebos Creek.

Enhances existing wetlands with the RRP area – Several existing wetlands have been identified within the proposed RRP boundary. Most of these wetlands and their buffers have been disturbed by development, conversion to agricultural lands, or are overrun with invasive plant species. The RRP would enhance the condition of most of these existing wetlands and permanently protect them with land conservancy.

Improves water quality – Hylebos Creek, Surprise Lake Drain, and Wapato Creek each have water quality impairments that the RRP would help improve, including:

- High in-stream temperatures
- Chronic summer low in-stream flows
- Nutrients, phosphorus, and fecal coliform
- Low dissolved oxygen
- Total Suspended Solids
- chemical contamination

Reduces flooding – The RRP addresses flooding issues with a variety of measures, primarily by removing buildings, roads, and infrastructure from the floodplain and restoring natural floodplain connectivity to stream channels. The floodway channel proposed for the relocated Surprise Lake Tributary, in combination with the hydraulic mitigations proposed for Hylebos Creek between Highway 99 and 12th Street, actually reduce the extent of flooding in areas beyond the RRP boundaries, resulting in more developable land.

Encourages public partnerships – The RRP would encourage public partnerships such as:

- Pacific National Soccer Complex
- Interurban Trail
- Potentially the Wapato Creek Trail
- Lower Hylebos Nature Park

Offers an alternative to conventional flow control Best Management Practices – The RRP is proposed as an alternative to conventional flow control Best Management Practices in reaches of Hylebos Creek, Surprise Lake Tributary, and Wapato Creek in the vicinity of the proposed Valley Avenue interchange. The RRP meets the flow control goal of preventing an increase in streambank erosion by directly stabilizing the currently denuded streambanks with native riparian vegetation. The RRP not only prevents an increase in flooded areas, another flow control goal, in the Hylebos Creek and Surprise Lake Tributary, but also reduces flood impacts by nearly 50 percent. The RRP enhances the biological integrity of the streams by improving the habitat of the streams and associated riparian areas.

Conclusion – Although the RRP, if developed to its full potential, could have substantial ecological benefits, cumulative impacts on critical resources are substantial. A single project cannot compensate for all past and future development, but it can set an example of how future development can be designed to reduce cumulative impacts.